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EXAMINER
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PEIKARI, BEHZAD

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2189

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



## **DETAILED ACTION**

### ***Drawings***

1. The previous objections to the drawings are moot due to the election made on September 17, 2007.
2. The drawings are objected to because the view numbers are not in accordance with 37 CFR 1.84(u)(1). For example, "FIG. 1" should replace "Fig. 1", etc. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

3. The previous rejections of claims 20, 21 and 23-25 under 35 U.S.C. 102, are withdrawn due to the amendment filed December 19, 2007.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 5-7, 9, 11-13 and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al. (US PGPub 2002/0071198, hereafter Liu).

(A) Regarding claim 1, Liu shows a hard disk drive (HDD) comprising: at least one rotatable disk (page 3, right hand column, lines 26-28);  
at least one write element (transducer) configured for writing data to the disk (page 3, right hand column, lines 28-30) in tracks, wherein at least two contiguous tracks establish a band (plurality of adjacent tracks written together) (page 6, left hand column, lines 35-52); and

at least one HDD controller controlling the write element (page 7, paragraph 73), the controller causing no band to contain more than one of: a single audio video (AV) data stream (one write of a sequential stream of audio video data fills one band [data block]) (page 6, right hand column, lines 20-27), and a single data file (data other than audio visual data can be stored in the same manner of filling multiple adjacent tracks with one sequential write) (page 6, paragraph 64).

(B) Regarding claim 2, Liu shows that at least some bands include at least three contiguous tracks (figure 13 and paragraph 68).

(C) Regarding claim 3, Liu teaches that the tracks concentric to each other (page 6, left hand column, lines 40-45).

(D) Regarding claim 5, Liu discloses that a first band has a first number of tracks and a second band has a second number of bands different from the first (number of tracks per band [block] can be change depending on use) (page 6, right hand column, lines 31-37).

(E) Regarding claim 6, Liu shows that isolated tracks (tracks with conventional track-to-track spacing) are used to store data requiring random write access and bands (tracks with condensed track-to-track spacing wherein multiple tracks are written sequentially) are used to store data requiring sequential write access (page 6, paragraph 67).

(F) Regarding claim 7, Liu teaches that at least one band contains data from one and only one audio video (AV) data stream (one write of sequential AV data per band [block]) (page 6, paragraph 68).

(G) Regarding claim 9, Liu shows that at least some tracks are shingled (track-to-track spacing equal to read transducer width) (page 6, left hand column, lines 35-52).

(H) Regarding claim 11, Liu discloses a data storage system comprising:  
at least one data storage disk (page 7, paragraph 73);  
at least one write element (write transducer) configured for writing data to the disk (page 7, paragraph 73);

at least one controller controlling the write element (page 7, paragraph 73) to write data onto the disk at least in bands [data blocks] (page 6, paragraph 68), no band on the disk containing more than one AV data stream (one write of a sequential stream of audio video data fills one band [data block]) (page 6, right hand column, lines 20-27), or one data file (data other than audio visual data can be stored in the same manner of filling multiple adjacent tracks with one sequential write) (page 6, paragraph 64), each band being established by at least two contiguous data tracks (page 6, right hand column, lines 21-24).

(I) Regarding claim 12, Liu shows that at least some tracks are shingled (track-to-track spacing equal to read transducer width) (page 6, left hand column, lines 35-52).

(J) Regarding claim 13, Liu shows that at least some bands include at least three contiguous tracks (figure 13 and paragraph 68).

(K) Regarding claim 15, Liu discloses that a first band has a first number of tracks and a second band has a second number of bands different from the first

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(number of tracks per band [block] can be change depending on use) (page 6, right hand column, lines 31-37).

(L) Regarding claim 16, Liu shows that isolated tracks (tracks with conventional track-to-track spacing) are used to store data requiring random write access and bands (tracks with condensed track-to-track spacing wherein multiple tracks are written sequentially) are used to store data requiring sequential write access (page 6, paragraph 67).

(M) Regarding claim 17, Liu teaches that at least one band contains data from one and only one audio video (AV) data stream (one write of sequential AV data per band [block]) (page 6, paragraph 68).

### ***Claim Rejections - 35 USC § 103***

6. The previous rejection of claims 22, 26 and 27 under 35 U.S.C. 103(a) is withdrawn due to the amendment filed on December 19, 2007.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 4 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to claims 1, 11, and 21 above, and further in view of Payne et al. (US Pat. 6,212,047, hereafter Payne).

Regarding claims 4 and 14, Liu teaches all the limitations of claims 1 and 11 as shown above, but Liu does not show the write element being configured for perpendicular recording.

Payne shows a magnetic disk system wherein the write element is configured for perpendicular recording (column 3, lines 45-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the configuration of the write element for perpendicular recording as taught by Payne in the disk system of Liu in order to achieve high density storage with good stability on magnetic disk storage (Payne, column 2, lines 3-11).

9. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to claims 7, 17, and 25 above, and further in view of Wei Loon et al. (US PGPub. 2002/0059276, hereafter Wei Loon).

Regarding claims 8 and 18, Liu teaches all the limitations of claims 7 and 17 as shown above but does not show the use of AV transaction blocks.

Wei Loon discloses a disk system with AV transaction blocks (cluster or block for storing audio/video data on the disk drive) wherein the size of partitions of the disk for storing the data of individual AV streams is larger than the size of an AV transaction block (partition composed of multiple AV transaction blocks) (page 3, paragraph 46), the transaction block size being larger than a sector size (block size based on buffer size, wherein buffers are used to regulate the transfer rates of AV data streams [page 2-3, paragraph 29]) (page 3, paragraph 33).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to segment the bands of Liu into AV transaction blocks as taught by Wei Loon in order to fill AV data buffers quickly allowing more time for other operations using the disk drive (Wei Loon, page 3, paragraph 33).

10. Claims 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to claims 1, 11, and 21 above, and further in view of Tomita et al. (US Pat. 6,449,607, hereafter Tomita).

Regarding claims 10 and 19, Liu teaches all the limitations of claims 1, 11, and 21 as shown above but does not show recording associations between files and the locations where the files are stored on the disk.

Tomita teaches a disk system wherein, for files and records (objects) (column 3, lines 66-67 through column 4, lines 1-5), a control element stores a list of physical locations on the disk associated therewith (column 10, lines 18-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the listing of physical locations associated with logical data structures by the controller as taught by Tomita in disk system with bands of Liu such that the bands associated with files and AV data streams are recorded by the control unit of the disk in order to allow for direct communication with the disk without the intervention of a host computer (Tomita, column 1, lines 41-44 and column 2, lines 40-52).

#### ***Allowable Subject Matter***

11. Claims 20-27 are allowed. In the claims, there is some ambiguity with respect to the duration for which “the remaining storage space in the band is not used”, i.e., whether this is permanent or only while the rest of the band is occupied by a file or stream; however, the claim would still overcome the previous rejection regardless of the duration for which the remaining storage space is not used.

#### ***Response to Arguments***

12. Applicant's arguments filed with the amendment of December 19, 2007 have been fully considered. Accordingly the rejections of claims 20-27 have been withdrawn. With regard to the rejections of claims 1-19, the arguments are not persuasive.

Whatever the band (or block) size, the independent claims would reasonably be taught by any situation in which a single file or stream exactly fills a band in the Liu et al. system. Applicant has indicated that such a situation is unlikely.

As stated in the advisory action of January 8, 2008, since the size of a band is flexible, the claimed "band" may be interpreted as "an area of memory containing a single data file or AV data stream". As such, all bands would contain only one file or stream.

Conversely, AV files were often edited to fit a particular size (e.g. 10 Megs, 2 Gigs, etc.), such files may fit exactly into an array of data blocks.

### ***Conclusion***

13. The rejected claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Peikari whose telephone number is (571) 272-4185. The examiner is generally available between 7:00 am and 7:30 pm, EST, Monday through Wednesday, and between 5:30 am and 4:00 pm on Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon, can be reached at (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center at 866-217-9197 (toll-free).

/ B. James Peikari /  
Primary Examiner, Art Unit 2189

5/26/08